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APPLICATION OF SOUTHWESTERN ELECTRIC POWER COMPANY FOR CERTIFICATE OF CONVENIENCE AND NECESSITY AUTHORIZATION AND RELATED RELIEF FOR THE ACQUISITION OF WIND GENERATION FACILITIES	§	**PUBLIC UTILITY COMMISSION OF TEXAS**

TEXAS INDUSTRIAL ENERGY CONSUMERS' REPLY TO EXCEPTIONS TO PROPOSAL FOR DECISION

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GLOSSARY OF ACRONYMS

AEO	Annual Energy Outlook
CCN	Certificate of Convenience and Necessity
DTA	Deferred Tax Asset
ITC	Investment Tax Credit
ITP	Integrated Transmission Planning
LBNL	Lawrence Berkeley National Lab
MMBtu	Millions of British Thermal Units
NPV	Net Present Value
NYMEX	New York Mercantile Exchange
O&M	Operations and Maintenance
PFD	Proposal for Decision
PSA	Purchase and Sale Agreements
PTC	Production Tax Credits
RFP	Request for Proposals
SPP	Southwest Power Pool
SPS	Southwestern Public Service Company
SWEPCO	Southwestern Electric Power Company
TIEC	Texas Industrial Energy Consumers

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TEXAS INDUSTRIAL ENERGY CONSUMERS' REPLY TO EXCEPTIONS TO PROPOSAL FOR DECISION

I. INTRODUCTION

Southwestern Electric Power Company (SWEPCO) begins its exceptions with the allegation that the Administrative Law Judges (ALJs) failed to consider "what is in the best interest of SWEPCO's Texas customers,"[1] and repeats that assertion throughout its brief. That claim is completely unfounded.

Contrary to SWEPCO's assertions, the Proposal for Decision (PFD) itself is almost entirely devoted to a detailed analysis of whether the proposed facilities are actually in the best interest of Texas ratepayers. SWEPCO may disagree with the conclusion of the ratepayer parties, the PUC Staff, and the ALJs, but even a cursory review of the PFD demonstrates that the ALJs were focused on what the actual evidence in the case—as opposed to SWEPCO's rhetoric—showed about the effect of the proposed facilities on ratepayers. Among the findings of the ALJs were:

1. SWEPCO has not demonstrated that the Wind Facilities will provide benefits to customers. (FoF 41)

2. The Wind Facilities are unlikely to result in the probable lowering of costs to customers. (FoF 58)

3. SWEPCO did not establish that the Wind Facilities would result in the probable lowering of costs to customers, with or without SWEPCO's proposed guarantees. (FoF 111)

[1] SWEPCO's Exceptions at 3.

4. SWEPCO did not demonstrate that the Wind Facilities would benefit customers if SWEPCO built a gen-tie to mitigate SWEPCO's understated congestion costs. (FoFs 82, 93)

5. SWEPCO's proposed guarantees are insufficient to protect consumers from the financial risks of the Wind Facilities. (FoF 112)

6. SWEPCO has not shown that the projects will result in the probable lowering of costs to retail customers pursuant to PURA § 37.056(c)(4)(e).

The ALJs' conclusion that the Wind Facilities were not in the best interests of ratepayers was supported by a thorough and detailed examination of the evidence in this case. Among the evidentiary findings that the ALJs made in support of their conclusion were:

1. SWEPCO's gas price forecasts have consistently over-estimated gas prices for over a decade, and SWEPCO's assumed gas prices of $5.40 per MMBtu (base case) and $4.50 per MMBtu (low/no carbon case) are considerably higher than what would result from the methods used in other recent Commission proceedings. (FoFs 46, 48, 51, 53)

2. SWEPCO's inclusion of an assumed carbon tax improperly caused the Wind Facilities to appear more economical than they actually were. (FoFs 63, 64)

3. SWEPCO understated new renewable generation in SPP, distorting the assumed power prices at the times during which Wind Facilities would operate. (FoFs 66, 68)

4. SWEPCO's claimed P50 production level of 44.01% excludes considerations of force majeure, mechanical defects, and curtailment, and is therefore higher than the actual median expected output of the Wind Facilities. (FoFs 70, 99)

5. While a significant amount of SWEPCO's claimed benefits of the Wind Facilities occurs in years 26 through 30 (2047-2051), the facilities should be evaluated on a 25-year useful life. (FoFs 80, 81)

6. SWEPCO understated congestion and loss-related costs associated with the delivery of power from the Wind Facilities. (FoF 82)

7. SWEPCO failed to show that the Wind Facilities would provide value by deferring future capacity needs. (FoF 96)

8. SWEPCO's economic analysis understated the revenue requirement of the Wind Facilities by ignoring the expected escalation of O&M costs. (FoF 102)

In addition to the detailed findings of fact on the effect of the Wind Facilities on Texas ratepayers, the PFD contains over 100 pages of painstaking analysis of the voluminous testimony and exhibits in this case. For SWEPCO to assert that the ALJs ignored any consideration of the effect of the Wind Facilities on Texas customers is an utter mischaracterization and a disservice to the conscientious efforts of the ALJs.

The effect of the proposed Wind Facilities on Texas ratepayers was far and away the most important issue in the case. There were numerous parties to the case that actually represented Texas ratepayers, and those parties clearly believed that SWEPCO's proposal for these unnecessary and expensive wind projects was not in their best interest. That position was supported by the testimony of a number of expert witnesses.[2] SWEPCO would have the Commission believe that Texas ratepayers have no idea what is really in their best interest. Nor apparently does the PUC Staff, which also found that the Wind Facilities are not in the public interest and that SWEPCO's Certificate of Convenience and Necessity (CCN) application "has a high potential to negatively impact Texas ratepayers."[3] In SWEPCO's world, it alone can discern what is in the best interest of Texans.

Following its unfounded claim that the ALJs ignored the statutory standard, SWEPCO undertakes to calculate in a series of footnotes what it now for the first time claims is the actual cost of the power from the Wind Facilities.[4] SWEPCO did not put forward this calculation at the hearing, and for good reason—a simple review of the source document for SWEPCO's new calculation reveals that SWEPCO has completely ignored its own calculation of (1) $893 million in costs for congestion and losses associated with the Wind Facilities and (2) $212 million in revenue requirement for carrying charges on SWEPCO's deferred tax asset (DTA).[5] Those calculations are shown in the very same column on the same page from which SWEPCO pulled

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[2] *See generally*, TIEC Ex. 1, Direct Testimony and Exhibits of Jeffry C. Pollock (Pollock Dir.); TIEC Ex. 2, Direct Testimony and Exhibits of Charles S. Griffey (Griffey Dir.); OPUC Ex. 1, Direct Testimony and Exhibits of Karl J. Nalepa (Nalepa Dir.); CARD Ex. 1, Direct Testimony and Exhibits of Scott Norwood (Norwood Dir.).

[3] Staff's In. Br. at 34-35.

[4] SWEPCO's Exceptions at 4.

[5] SWEPCO Ex. 8, Direct Testimony and Exhibits of John F. Torpey at Errata Exhibit JFT-3 at 1, Lines 2, 7 (Torpey Dir.).

the revenue requirement and Production Tax Credit (PTC) estimates for its new calculation, but SWEPCO chose to pretend these very real ratepayer costs did not exist. Simply including those costs in the revenue requirement reveals that SWEPCO's own calculation of the cost of the power from the facilities—even with all the erroneous assumptions that artificially lower the estimate—is not $24.23/MWh, but $36.03/MWh.[6] And not only is the $36/MWh cost understated for all of the reasons identified above, it is for wind power that is most often generated overnight during off-peak hours, when the avoided cost of the power it is replacing may be low or even negative.[7] The evidence in this case showed that the average forward market price for off-peak power at the SPP South Hub through 2028 was $15/MWh or less, and the average price in the on-peak periods (when the Wind Facilities are less likely to be generating) was only $23-25/MWh.[8] Thus, even accepting all of SWEPCO's rejected assumptions about the cost per MWh of the output from the Wind Facilities, the economics of those facilities are still far underwater.

SWEPCO also complains in its introduction that "the most obvious failure of the PFD" was the rejection of SWEPCO's proposed P50 production level.[9] SWEPCO fails to mention, however, that the PFD specifically found that SWEPCO's proposed P50 production level overstated the actual median expected performance of the Wind Facilities because SWEPCO did not account for force majeure events, mechanical defects, or curtailments in estimating the output of the facilities over 30 years.[10] Given SWEPCO's failure to make any quantification of the effects of the items excluded from its P50 level, the ALJs properly rejected the use of that erroneous projection and instead recommended using the only other performance level SWEPCO put in the record. It should be noted, however, that the project is uneconomic even using SWEPCO's inflated

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[6] *Id.* at Ex. JFT-3 at 1 (3,233,000,000+893,000,000+212,000,000-963,000,000)/(8760*44.01%*810*30) = $36.03/MWh. The 2022 price per MWh is (132,000,000+18,000,000+4,000,0000-88,000,000)/(8760*44.01%*810) = $21.14/MWh. It should be noted that SWEPCO's 2022 calculation assumes that ratepayers are credited with PTCs that SWEPCO cannot use that year. SWEPCO then proposes to earn its rate of return on a deferred tax asset it will create. So ratepayers will be paying additional amounts in future years for the electricity used in 2022.

[7] TIEC Ex. 49 at 31-32 (SPP State of the Market Fall 2019 showing average prices for on-peak and off-peak hours in SPP and noting that negative price intervals can be caused by high amounts of wind generation).

[8] TIEC Ex. 2, Griffey Dir. at 36, Figure 9.

[9] SWEPCO's Exceptions at 5.

[10] PFD at 116, FoF 70 & 119, FoF 99.

P50 production level. As TIEC witness Mr. Griffey testified, simply adjusting for gas prices, implied heat rates, congestion costs, useful life, and the capacity value results in a $314 million net cost to ratepayers (NPV) for these unnecessary facilities, even at SWEPCO's erroneous P50 production level and without further adjustments for all the other errors in SWEPCO's economic analysis.[11]

The economic case for the Wind Facilities is not a close call. It is far worse than what the Commission encountered in SWEPCO's Wind Catcher proposal. In fact, even if one were to accept 7 of the 8 ways identified above that SWEPCO skewed the analysis in favor of the Wind Facilities (including its inflated estimate of the production level), and simply substituted a reasonable estimate of natural gas prices, the economics of the proposal are far under water. SWEPCO itself calculated breakeven natural gas prices for the Wind Facilities, which come out to $3.67 per MMBtu on a levelized basis.[12] The most recent EIA Low Case is $3.46 per MMBtu[13] and the trended NYMEX futures market price is $3.10 per MMBtu.[14] Similarly, the natural gas price using the methodology applied in the Southwestern Public Service Company (SPS) wind case is well below SWEPCO's breakeven level.[15] And of course, once one corrects all the errors the ALJs identified in SWEPCO's economic analysis, the breakeven gas price for these facilities is considerably higher than $3.67 per MMBtu.

SWEPCO asserts that its proposal in this case should not be compared to its Wind Catcher proposal,[16] and TIEC agrees. That comparison is unfair to Wind Catcher. Wind Catcher quite clearly would have been a disaster for Texas ratepayers, but the current proposal is even worse. For all of its problems, Wind Catcher would have produced 16% more energy per installed MW

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[11] TIEC Ex. 2, Griffey Dir. at 44-45; *see also* PFD at 78-79.

[12] TIEC Ex. 1, Pollock Dir. at 21.

[13] *Id.*

[14] *Id.*

[15] *See* PFD at 29-30; *see also infra* Section VI.C.2.a.; TIEC's In. Br. at 31.

[16] SWEPCO's Exceptions at 6.

than the less-efficient facilities at issue here.[17] And Wind Catcher was not burdened with high costs for congestion and losses, which even SWEPCO admits would add roughly 50% to the levelized cost of energy of the proposed facilities.[18] Further, in the *Wind Catcher* case, SWEPCO was at least able to calculate a breakeven natural gas price that was below the EIA Low Case forecast and NYMEX futures market prices.[19] In this case, even with all the erroneous assumptions biasing the analysis in favor of the Wind Facilities, those facilities are uneconomic based on those same forecasts.

The dismal economics of SWEPCO's proposal are in part due to the fact that natural gas forecasts and futures prices have declined considerably since SWEPCO issued the request for proposals (RFP). But this case is not about the prudence of SWEPCO's decision when it prepared the RFP in 2018 or negotiated the Purchase and Sale Agreements (PSAs) in early 2019. Rather, the case is about whether this Commission should find, based on the record in this case, that granting a CCN "is necessary for the service, accommodation, convenience, or safety of the public."[20] Whatever SWEPCO may have believed about the economics of these projects in 2018, the evidence in this case demonstrates that not only has SWEPCO failed to meet its burden of proof that these projects are necessary for service to its ratepayers, but that the approval of a CCN for these projects would be disastrous for SWEPCO's ratepayers.

SWEPCO claims at the outset of its exceptions that the Wind Facilities would provide "largely fixed-price low-cost clean energy," a phrase SWEPCO reiterates six times in its introduction, as if repeating it would make it so. But the evidence in this case shows that the energy that would be produced by the Wind Facilities is in no sense "low-cost," with costs well above the projected LMPs at the time the Wind Facilities would be generating power.[21] And the

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[17] *Compare* TIEC Ex. 5 at 6 (noting 51.1% P50 capacity factor for Wind Cather) *with* PFD at 116, FoF 70 (noting purported P50 capacity factor of 44.01%).

[18] SWEPCO Ex. 8, Torpey Dir. at Ex. JFT-3; *see supra* note 6.

[19] *Application of Southwestern Electric Power Company for Certificate of Convenience and Necessity Authorization and Related Relief for the Wind Catcher Energy Connection Project in Oklahoma*, Docket No. 47461, PFD at 26 (May 18, 2018).

[20] PURA § 37.056(a).

[21] TIEC Ex. 2, Griffey Dir. at 36.

evidence also shows that the costs are anything but fixed-price, as even SWEPCO estimates congestion costs of almost $900 million,[22] and quite possibly the need for an expensive transmission line across an as-yet-uncharted route in Oklahoma.[23] Rather, the Wind Facilities represent a risky, expensive, and entirely unnecessary burden for SWEPCO's Texas ratepayers in the form of yet another large base rate increase. The ALJs properly found that the proposed CCN would not be in the public interest or the best interest of Texas customers. TIEC respectfully requests that the Commission approve the PFD.

V. CERTIFICATE OF CONVENIENCE AND NECESSITY STANDARD OF REVIEW (P.O. ISSUE NO. 2)

The PFD properly sets out the standard the Commission should follow in this case.[24] This statutory standard is stated as a limitation on the Commission's authority; that the Commission may approve a CCN "only if the Commission finds that a certificate is necessary for the service, accommodation, convenience, or safety of the public."[25] The statute then identifies a number of factors for the Commission to consider.[26] It is undisputed that SWEPCO's proposed Wind Facilities are not needed to meet capacity requirements, and the other listed considerations in the statute thus do not apply, apart from the consideration of the effect on costs.[27] Accordingly, the only possible justification for the Wind Facilities is that they will lower costs,[28] which is one of the six non-exclusive "other factors" the Commission may consider.[29] As the PFD makes clear, SWEPCO has not shown that the Wind Facilities are likely to lower costs. Given that SWEPCO failed to meet its burden of proof on the only conceivable justification for the Wind Facilities, that factor ends the inquiry.

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[22] SWEPCO Ex. 8, Torpey Dir. at Ex. JFT-3 at 1.

[23] TIEC Ex. 59; SWEPCO Ex. 7, Direct Testimony of Kamran Ali at 13 (Ali Dir.).

[24] PFD at 9.

[25] PURA § 37.056(a).

[26] *Id.* § 37.056(c).

[27] PFD at 9-10.

[28] *Id.* at 9, 11.

[29] *Id.* at 6, 80.

SWEPCO's exceptions seem to assert that if it had shown so much as a 51% chance of some lowering of costs over a 30-year period, it would be entitled to a CCN for the Wind Facilities.[30] While SWEPCO's position matters little on this record given that it has not remotely demonstrated a probability of savings, TIEC would point out that while a showing of a 51% probability of at least some savings is necessary in a case where that is the sole justification, it is not sufficient. For instance, it is hard to imagine that a project would be deemed in the best interest of ratepayers if the potential savings were probable but small, while the downside risk was less probable but of far greater magnitude. The same may be said where the projected savings are uncertain and far in the future, while the costs are certain and immediate. For this reason, the Commission has properly demanded that the economics of a project be tested under a variety of assumptions before committing to a billion dollars or more of fixed costs to be paid for by ratepayers.[31] SWEPCO failed to provide a realistic range of assumptions in this case, as the ALJs expressly found, and as discussed throughout this brief.[32]

The PFD properly sets forth the statutory standard for a CCN and properly finds that SWEPCO has failed to meet it.

VI. ANALYSIS OF ECONOMICS OF SELECTED WIND FACILITIES (P.O. ISSUE NOS. 2, 3, 5, 6, 19, 23)

C. Economic Modeling

2. Projected Production Cost Savings

a. Natural Gas Prices

Introduction and Summary

It is helpful to begin with a summary of the key evidence on natural gas prices. As it did in *Wind Catcher*, SWEPCO used AEP's Fundamentals Forecast projections in its modeling in this

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[30] SWEPCO's Exceptions at 7-8.

[31] *Application of Southwestern Public Service Company for Approval of Transactions with ESI Energy, LLC and Invenergy Wind Development North America LLC, to Amend a Certificate of Convenience and Necessity for Wind Generation Projects and Associated Facilities in Hale County, Texas and Roosevelt County, New Mexico, and for Related Approvals*, Docket No. 46936, Final Order at 3, 4 & 21, FoFs 111-13.

[32] PFD at 114, FoFs 40-41.

case.[33] On a levelized basis, AEP's base case and low/no carbon case (the lowest case) projections are $5.40 and $4.50 per MMBtu, respectively, from 2021 to 2051.[34] SWEPCO also presented a "breakeven" natural gas price based on its modeling assumptions, including those the PFD finds are not supported in the record. SWEPCO's breakeven natural gas price based on those best-case assumptions is $3.67 per MMBtu on a levelized basis.[35] SWEPCO witness Karl Bletzacker created the version of AEP's forecast that SWEPCO used in this case in April 2019.[36] In his direct testimony, he pointed to similarities between AEP's base case and EIA's 2019 Annual Energy Outlook (AEO) forecasts and, in particular, EIA's 2019 Reference Case.[37] When EIA issued its 2020 AEO in January, however, that comparison fell apart.

EIA's 2020 AEO fell across the board from the 2019 version. The 2020 EIA Reference Case dropped to $4.24 per MMBtu on a levelized basis, which is fully $1.16 per MMBtu below AEP's base case, and even $0.25 per MMBtu below its low/no carbon case.[38] Notably, EIA's 2020 Low Case[39] dropped by $0.90 per MMBtu on an average basis from the 2019 version to the 2020 AEO.[40] The 2020 EIA Low Case projects a $3.46 per MMBtu price (levelized), which is below SWEPCO's claimed breakeven price for the Wind Facilities.[41] In other words, if current EIA Low Case prices come to fruition, the Wind Facilities will be uneconomic under SWEPCO's own calculations. This is a critical fact for at least two reasons. First, as the ALJs found in the

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[33] SWEPCO Ex. 5, Direct Testimony and Exhibits of Karl R. Bletzacker at 3-13 (Bletzacker Dir.); SWEPCO's In. Br. at 22-24.

[34] TIEC Ex. 1, Pollock Dir. at 21. For the underlying yearly prices, see TIEC Ex. 1B, Workpapers to the Direct Testimony of Jeffry C. Pollock at WP "Exhibit JP 1, 3, 4 Henry Hub Benchmarks, Implied Heat Rates, Futures Prices (Errata)." (Pollock Dir. Workpapers).

[35] TIEC Ex. 1, Pollock Dir. at 21.

[36] Tr. at 201:13-16 (Bletzacker Cross) (Feb. 25, 2020).

[37] SWEPCO Ex. 5, Bletzacker Dir. at 11-12.

[38] TIEC Ex. 1, Pollock Dir. at 21. Note that the EIA forecast only goes out to 2050, and Mr. Pollock calculated the 2051 forecast by escalating the last year of the EIA forecast. TIEC Ex. 1B, Pollock Dir. Workpapers at WP "Exhibit JP 1, 3, 4 Henry Hub Benchmarks, Implied Heat Rates, Futures Prices (Errata)."

[39] This is EIA's lowest price case, the "High Oil and Gas Supply Case." TIEC Ex. 1, Pollock Dir. at 19.

[40] TIEC presented this calculation on page 28-29 of its reply brief. For the underlying yearly prices, see TIEC Ex. 3.

[41] TIEC Ex. 1, Pollock Dir. at 21.

PFD, and as the Commission found in *Wind Catcher*, EIA's Low Case has been the most accurate in recent years.[42] Second, SWEPCO's purported breakeven price is based on its own flawed modeling, which contains numerous assumptions that skew the analysis in favor of the Wind Facilities. This includes all of SWEPCO's assumptions that are not captured by market energy prices, such as the useful life of the facilities, congestion costs, the absence of a gen-tie, capacity value, O&M costs, and the capacity factor at which the facilities will produce.[43] The ALJs made adverse findings to SWEPCO on each of these assumptions,[44] and also found that "SWEPCO's modeling results should be interpreted to account for a wide margin of error."[45] Thus, SWEPCO's claimed breakeven gas price is unreliable, and a true breakeven price would likely be significantly higher.

The record also includes additional evidence on future natural gas prices demonstrating that the Wind Facilities are an unacceptably risky proposition for ratepayers. This includes an SPS-method low forecast on which the PFD made a finding,[46] near- and long-term NYMEX futures prices,[47] and evidence that AEP's gas forecasts continue to be flawed and overstated.[48] Based on the record as a whole, the ALJs made 17 findings of fact on natural gas prices, including that the forecasts and futures prices in the record show that the Wind Facilities are unlikely to lower costs for customers.[49] These findings provide sufficient reason in and of themselves to deny SWEPCO's application. And SWEPCO simply has no answer for them.

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[42] PFD at 34 (citing Docket No. 47461, Final Order at 18, FoF 89).

[43] SWEPCO Ex. 5, Bletzacker Dir. at 13-15; SWEPCO Ex. 8, Torpey Dir. at 6-7 (explaining that the breakeven prices were calculated by proportionally reducing the assumed LMPs/gas prices by the production cost savings reduction that would be required to breakeven).

[44] PFD at 52-53 (capacity factor); 57 (useful life); 68-69 (congestion); 70-71 (gen-tie); 72 (capacity value).

[45] *Id.* at 16.

[46] *Id.* at 29-30 & 114-15, FoF 51.

[47] *Id.* at 22-24.

[48] *Id.* at 25-26, 34.

[49] *Id.* at 114-115, FoFs 42-58.

Indeed, SWEPCO's exceptions all but ignore the evidence underlying the ALJs' recommendations on natural gas price issues. For example, SWEPCO makes no real effort to dispute the ALJs' determination that "SWEPCO's projected gas prices are inflated . . . ."[50] Instead, SWEPCO attempts to change the subject, mischaracterizing the ALJs' decision as focused on a single, "worst-case scenario" forecast,[51] and arguing that there are other forecasts in the record that purportedly show that the Wind Facilities would be economic.[52] But the alleged "worst-case scenario" forecast SWEPCO references is the above-discussed EIA Low Case,[53] which has been the most accurate under current market conditions. Further, the only specific forecasts SWEPCO discusses in support of its argument are the EIA side cases that are even higher than the EIA Reference Case that the ALJs found to be "too high" based on actual prices from recent years.[54] SWEPCO has not provided any basis for the Commission to depart from the ALJs' finding on natural gas prices.

The evidence on the 2020 EIA Forecasts demonstrates that the Wind Facilities are unlikely to provide savings to customers.

The 2020 EIA Low Case is below SWEPCO's claimed breakeven price, and even the 2020 EIA Reference Case is only $0.57 per MMBtu above it on a levelized basis.[55] Given the above-discussed problems with SWEPCO's purported breakeven price, these forecasts—both of which were relied upon by the ALJs[56]—demonstrate that the Wind Facilities pose an unacceptable risk to ratepayers. This is particularly true given EIA's recent history in projecting gas prices.

The evidence shows that EIA's Reference Case projections have consistently overstated natural gas prices in the post-shale revolution era. As TIEC witness Charles Griffey testified:

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[50] *Id.* at 34; *see also* SWEPCO's Exceptions at 6, 12 (noting only that SWEPCO presented a newer forecast in this case than in *Wind Catcher*, which is 34% lower).

[51] SWEPCO's Exceptions at 13.

[52] *Id.* at 10-12.

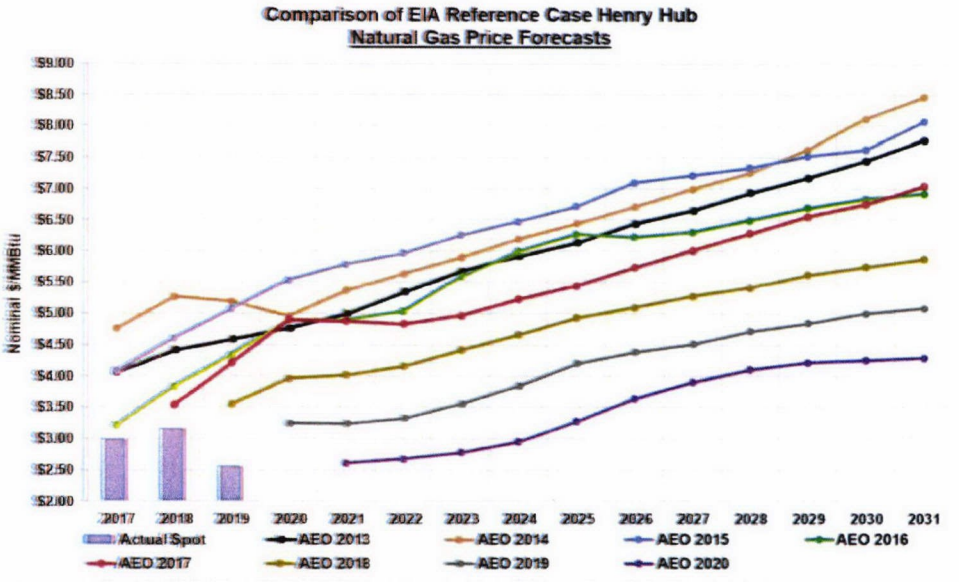
[53] *Id.* at 12-13.

[54] PFD at 34 ("Moreover, convincing evidence shows that the EIA Reference Case is still too high when viewed in retrospect.").

[55] TIEC Ex. 1, Pollock Dir. at 21.

[56] PFD at 34.

"EIA forecasts of gas prices have always been lagging indicators and have historically overstated future gas prices, particularly since the advent of the shale revolution."[57] TIEC witness Jeffry Pollock also testified that EIA's Reference Case has overstated actual prices, and included the following chart in his testimony to demonstrate the point: [58]



As can be seen, each of EIA's Reference Cases since 2013 projected much higher natural gas prices than what actually occurred.

Given that the Reference Case has been overstated, it is unsurprising that EIA's Low Case has been the most accurate under current market conditions. The EIA Low Case projects the largest available supply of natural gas among the EIA cases.[59] The Commission made a finding that this case has been the most accurate in recent years in the *Wind Catcher* case, which was tried in 2018.[60] That trend has continued in 2019 and 2020, as demonstrated in the following chart showing the 2018-2020 EIA Low Case projections compared to market prices:

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[57] TIEC Ex. 2, Griffey Dir. at 30-31 (footnotes omitted).

[58] TIEC Ex. 1, Pollock Dir. at Ex. JP-2.

[59] *Id.* at 18-19.

[60] TIEC Ex. 5 at FoF 89.

	2019	2020
2018 EIA Low Case[61]	$3.25	$3.55
2019 EIA Low Case[62]	$2.90	$2.90
2020 EIA Low Case[63]	N/A	$2.52
Henry Hub Prices	$2.56[64]	$2.25 (NYMEX futures)[65] $1.90-$2.00 (spot Henry Hub prices at time of hearing)[66]

Thus, the recent versions of EIA's lowest-price case actually overshot prices in 2019, and are on pace to do so for 2020 as well.

In its exceptions, SWEPCO does not challenge the ALJs' determinations that EIA's Reference Case has been too high,[67] and that the EIA Low Case has been the most accurate in recent years.[68] Instead, SWEPCO's argument is that conditions may change over the "longer term."[69] SWEPCO's support for this proposition is a passing reference to statements from certain "shale-focused" companies to their investors regarding the prospect of reduced drilling activities if gas prices stay low or decline.[70] These statements, however, do not demonstrate that the current natural gas paradigm is likely to be upended in the future. Indeed, they are entirely consistent with the fact that there that there is an abundance of available natural gas. And they confirm that market participants are actively considering the possibility that prices will stay low or even decline going forward. Regardless of whether any particular company will choose (or have the wherewithal) to

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[61] TIEC Ex. 30 at 1.

[62] TIEC Ex. 3.

[63] *Id.*

[64] TIEC Ex. 1, Pollock Dir. at 17.

[65] TIEC Ex. 24.

[66] Tr. at 224:10-13 (Bletzacker Cross) (Feb. 24, 2020).

[67] PFD at 34.

[68] *Id.* at 115, FoF 52.

[69] SWEPCO's Exceptions at 12.

[70] *Id.*; *see also* SWEPCO Ex. 17, Rebuttal Testimony of Karl R. Bletzacker at 24-25 (Bletzacker Reb.).

pursue drilling activities at a given price point, the shale gas is there to be developed.[71] And development will become particularly attractive if prices were to begin to rise in the dramatic fashion that would be required to make the Wind Facilities an economic proposition.

SWEPCO also ignores the fact that EIA's annual forecasts are falling with time as it struggles to capture the reality of persistently low prices. This is evident from Mr. Pollock's above-reproduced chart, which shows that EIA's Reference Cases are declining year after year. Further, EIA's 2020 Low Case declined by $0.90 per MMBtu on an average basis from the 2019 version of that case.[72] The 2020 EIA Low Case and Reference Case forecasts already demonstrate that SWEPCO's proposed Wind Facilities are a bad bet, but if the trend continues, these forecasts will drop even lower in the future.

The evidence supports the ALJs' findings on natural gas prices.

While the ALJs stated that they found the EIA's Low Case to be the most accurate based on the evidence,[73] they also considered numerous other forecasts in the record in reaching their decision. Indeed, this is clear from the PFD's Finding of Fact 58, which states that the "forecasts" (plural) and "futures prices in the record" demonstrate that the Wind Facilities are unlikely to lower costs to customers.[74] This evidence includes a forecast created[75] using Southwestern Public Service Company's (SPS) low-case methodology,[76] which yields prices that are more than $0.90 per MMBtu below SWEPCO's breakeven prices on an average basis, and are also lower in every

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[71] Indeed, the EIA increased its estimate of technically recoverable natural gas in the U.S. for its Reference Case by 12% and for its Low Case by 16% between the 2019 and 2020 AEOs. *Compare* TIEC Ex. 35 at 5 *with* TIEC Ex. 36 at 6.

[72] TIEC presented this calculation on page 28-29 of its reply brief. For the underlying yearly prices, see TIEC Ex. 3.

[73] PFD at 33-34.

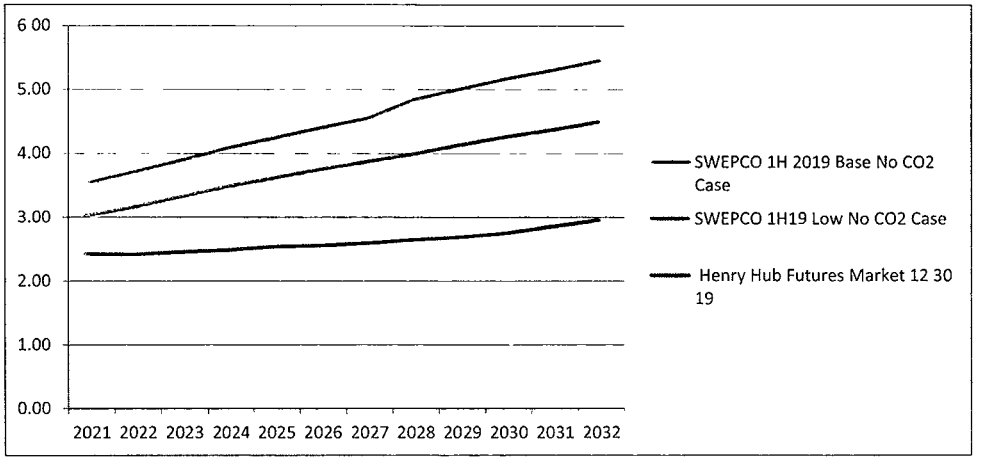
[74] *Id.* at 115, FoF 58.

[75] For background, see PFD at 29-30; TIEC's In. Br. at 28-31.

[76] SPS's methodology blends three third-party forecasts with NYMEX futures prices to derive a composite gas forecast. TIEC Ex. 80 at 20. To convert a base-case forecast to a low-case, SPS reduces the "growth rate by 50% . . . following the period in which the gas forecast is 100% market based." *Id* at 28. The SPS method forecast is 100% NYMEX-based for the first three years, so the growth rate is reduced by 50% after year three. *Id.* at 20.

year.[77] Notably, the Commission considered (and made a finding on) the low-case version of a SPS forecast in denying SWEPCO's proposal in *Wind Catcher*.[78]

The evidence also includes NYMEX futures prices, which demonstrate that SWEPCO's projected natural gas prices are inflated and that the Wind Facilities are unlikely to be economic. The levelized NYMEX futures price over the proposed life of the Wind Facilities is $3.10 per MMBtu, which is under SWEPCO's asserted breakeven price of $3.67 per MMBtu, and substantially lower than SWEPCO's base and low/no carbon case projections of $5.40 and $4.50 per MMBtu, respectively.[79] Moreover, the evidence also shows that NYMEX futures over the next 10 years are far lower than SWEPCO's projections. For example, Mr. Griffey included the following chart in his testimony:[80]



There is simply no shortage of evidence to support the ALJs' findings on natural gas prices.

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[77] TIEC presented this calculation in a chart on page 31 of its initial brief. *See also* PFD at 114-115, FoF 51 (finding, based on TIEC's calculation, that the average price of this SPS-low-method forecast is $3.34 per MMBtu). Note that this $3.34 figure is the average price from 2020-2050, but that SWEPCO's breakeven prices begin in 2021. The average price under the SPS-low-method for 2021 to 2050 is slightly higher at $3.38 per MMBtu, which is still more than $0.90 per MMBtu lower than SWEPCO's average breakeven price for those years ($4.29 per MMBtu). TIEC's In. Br. at 31.

[78] TIEC Ex. 5 at 4-5 & 18, FoF 83.

[79] TIEC Ex. 1, Pollock Dir. at 21.

[80] TIEC Ex. 2, Griffey Dir. at 20.

On this record, SWEPCO's complaints that the PFD "fails the Commission"[81] ring hollow. SWEPCO points out that it presented a different Fundamentals Forecast (with lower prices) in this case than it did in the *Wind Catcher* case.[82] That is unsurprising, given that *Wind Catcher* was filed in 2017, and gas-price projections have been falling since then.[83] It also says nothing about whether SWEPCO's projections in this case (which are themselves now over a year old) are reasonable. And the record evidence, as discussed throughout this brief and detailed in the PFD[84] demonstrates that they are not. SWEPCO's projections are outliers compared to other outlooks on future natural gas prices, including the 2020 EIA Reference and Low Case projections,[85] an SPS-method forecast,[86] and both near- and long-term NYMEX futures prices.[87] SWEPCO also fails to mention that while Mr. Bletzacker presented a 2019 forecast in this case, he did not change any of the flawed, opaque methodologies[88] that he used to create the forecast he presented in *Wind Catcher*.[89] Those methods have caused AEP to chronically overstate gas prices for over a decade, as the Commission specifically found in *Wind Catcher*.[90] The evidence demonstrates that this trend has continued since then, and the ALJs included the same finding in the PFD in this case.[91] SWEPCO did not except to it.

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[81] SWEPCO's Exceptions at 8.

[82] *Id.* at 12.

[83] For example, as discussed above, EIA's forecasts dropped substantially from 2019 to 2020. *See, e.g.*, TIEC Ex. 3 (showing EIA's 2019 and 2020 gas price forecasts).

[84] PFD at 29-30, 34.

[85] TIEC Ex. 1, Pollock Dir. at 21.

[86] TIEC's In. Br. at 31.

[87] TIEC Ex. 1, Pollock Dir. at 21; TIEC Ex. 2, Griffey Dir. at 20.

[88] Tr. at 244:3-14 (Bletzacker Cross) (Feb. 24, 2020); TIEC Ex. 33.

[89] TIEC Ex. 31; Tr. at 236:18-237:4 (Bletzacker Cross) (Feb. 24, 2020).

[90] TIEC Ex. 5 at FoF 80.

[91] PFD at 114, FoF 47.

SWEPCO also argues without citation that there are many forecasts in the record and that "almost all of them" are above the breakeven price for the Wind Facilities.[92] Even setting aside the problems with its calculation of breakeven price, SWEPCO's contention provides no basis for departing from the ALJs' findings on this issue. As an initial matter, the only forecasts SWEPCO actually cites in its exceptions are the 2020 EIA AEO cases.[93] But as discussed above, the 2020 EIA Low and Reference Cases demonstrate that the Wind Facilities are unlikely to provide net savings. And given the uncontroverted evidence that the EIA's Reference Case has been overstated under current conditions,[94] SWEPCO has not provided any credible reason to rely upon EIA cases that project even higher prices than the Reference Case.

SWEPCO also references additional forecasts, though it does not bother to identify to them. In addition to its own flawed forecasts, SWEPCO is apparently referring to a highly-sensitive chart in Mr. Bletzacker's rebuttal testimony, in which he included numerous third-party forecasts.[95] However, Mr. Bletzacker included many outdated forecasts in this chart, including all of EIA's superseded 2019 cases and third-party forecasts from 2018.[96] This is particularly strange given that SWEPCO itself seems to acknowledge that gas forecasts are declining year over year. Indeed, as noted, SWEPCO touts the fact that Mr. Bletzacker's forecasts in this case are lower than the ones he provided in *Wind Catcher*. SWEPCO's reference to unspecified forecasts does not demonstrate that the Wind Facilities are likely to provide net savings, particularly when the EIA forecast the Commission has found to be the most accurate shows that the opposite is true.[97]

Ultimately, SWEPCO does little more than argue that it is possible that gas prices will increase substantially and that the Commission should therefore grant its application. But in

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[92] SWEPCO's Exceptions at 9.

[93] *Id.* at 8-13.

[94] PFD at 34.

[95] SWEPCO Ex. 17A, HS Rebuttal Testimony and Exhibits of Karl R. Bletzacker at 21 (Bletzacker HS Reb.).

[96] *Id.*; *see also* SWEPCO Ex. 17C, HIGHLY SENSITIVE Workpapers to the Rebuttal Testimony of Karl R Bletzacker at WP "Bletzacker WP Highly Sensitive.xlsx" (listing forecasts) (Bletzacker HS Reb. Workpapers).

[97] PFD at 115, FoFs 52-53.

addition to failing to show that this potential "upside" to ratepayers from the Wind Facilities is probable, SWEPCO ignores the fact that, if conditions truly change, it will have other options to mitigate against high natural gas prices in the future. On the other hand, if the Commission authorizes SWEPCO to construct these facilities and place them in rate base, ratepayers will be locked into substantial costs regardless of what future conditions occur. The Commissioners recognized this risk asymmetry in denying the *Wind Catcher* application, and TIEC requests that they do the same here.[98]

b. Other Assumptions Affecting Locational Marginal Prices

i. Carbon Tax

The ALJs properly rejected SWEPCO's proposal to use an assumed carbon tax to bias the economic evaluation in favor of the Wind Facilities,[99] just as the Commission did with respect to SWEPCO's carbon assumption in *Wind Catcher*.[100] The carbon-tax assumption, which SWEPCO included in its base case and several other cases, has a major impact on the economic analysis. The primary effect is to increase the projected LMPs in the modeling, which in turn makes the Wind Facilities look more economic because they will show higher energy-cost savings.[101] For example, SWEPCO's base case shows $171 million NPV more in net benefits than the version of its base case that does not include the carbon tax.[102] SWEPCO has not come close to justifying this assumption.

Congress has never enacted a tax on carbon,[103] and SWEPCO offers no credible evidence that the imposition of such a tax is likely. Instead, it simply argues that there is a "possibility greater than zero" that a carbon tax will be adopted in the future, and that the Commission should

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[98] TIEC Ex. 2, Griffey Dir. at 13-14 (citing commissioners' open meeting statements in *Wind Catcher*).

[99] PFD at 115, FoF 64.

[100] TIEC Ex. 5 at FoF 96.

[101] Mr. Pollock included in his testimony a chart showing the jump in projected LMP prices from the carbon-tax assumption, which is reproduced in the PFD at page 36.

[102] SWEPCO Ex. 8, Torpey Dir. at Ex. JFT-3 at 1-2.

[103] TIEC Ex. 2, Griffey Dir. at 39.

therefore account for this "plausible future circumstance."[104] But SWEPCO's self-serving assurances that a speculative contingency may come to pass do not serve as a substitute for proof. Further, SWEPCO's arguments miss the point. The ALJs did not reject SWEPCO's carbon-tax assumption because they found that there was no possibility whatsoever that such a tax would be adopted in the future. They did so because "the evidence shows that forecasting that likelihood is far too speculative to form the basis for evaluating the probable benefits of a billion dollar generating facility."[105]

The evidence supports the ALJs' findings on the carbon-tax assumption. As Mr. Pollock testified, the prospects of a carbon tax have dimmed considerably over the last decade plus.[106] In 2008, there was a strong bipartisan push to adopt carbon burdens.[107] However, those efforts failed, and bipartisanship on the issue has all but disappeared.[108] Moreover, to the extent that Congress musters the will to act on carbon, it is far more probable that it will do so by incenting carbon-free generating sources rather than penalizing carbon-emitting ones. Indeed, that is what it has always done in the past. While Congress has never enacted a tax on carbon, it has adopted and renewed tax credits for renewable energy sources (like PTCs for wind and the investment tax credit (ITC) for solar) on numerous occasions.[109] In fact, a powerful lobby has arisen around PTCs and ITCs, resulting in the former being extended ten times since 1999 and the latter being extended twice since 2007.[110] SWEPCO's citation to Mr. Pollock's testimony on a carbon assumption in a 2008 case thus misses the mark.[111] As, Mr. Pollock testified, the experience of the last decade teaches

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[104] *E.g.*, SWEPCO's Exceptions at 13-14.

[105] PFD at 39.

[106] Tr. at 637:5-638:23 (Pollock Redir.) (Feb. 26, 2020).

[107] *Id.*

[108] *Id*

[109] TIEC Ex. 2, Griffey Dir. at 39-40.

[110] *Id*

[111] TIEC notes that the PFD refers to Mr. Pollock as testifying in favor of a carbon tax at that time. PFD at 38. To be clear, Mr. Pollock's testimony was that a carbon-tax assumption should be used to evaluate the plant at issue in that PUC proceeding, not that the U.S. Congress should actually adopt such a tax.

that "policymakers have decided that the best way to encourage renewable development is through tax credits, not through a carbon tax."[112]

Notably, incentives for renewable generation have the opposite effect on LMPs as a carbon tax: the incentives lower market prices, while a carbon tax increases them.[113] Consequently, while assuming a carbon tax in the modeling improves the projected economics of the Wind Facilities, the more likely assumption that existing renewable subsidies will be extended—or new ones adopted—would have the opposite effect.[114] But despite its protest regarding considering "plausible" scenarios, SWEPCO only included the carbon-tax assumption in its analysis.[115]

In the final analysis, SWEPCO's carbon-tax arguments bear a striking resemblance to those it raises on the natural-gas-price issue. In both cases, SWEPCO's position is that the status quo might change, and that the Commission should therefore adopt assumptions that greatly benefit the economics of the Wind Facilities (while eschewing assumptions that are both more likely and have the opposite effect). However, the mere argument that things can change is patently insufficient to support a billion-dollar-plus generation acquisition that is not needed for capacity or reliability reasons. SWEPCO has not met its burden of proof on this issue.

ii. Future Renewable Generation

The ALJs correctly found that SWEPCO understated future renewable generation in the SPP in its modeling.[116] This issue is important because renewable resources such as wind and

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[112] Tr. at 622:3-11 (Pollock Cross) (Feb. 26, 2020). SWEPCO's references to the Commission's findings on a carbon assumption in Docket No. 46449—a different case, with a different evidentiary record—are similarly unavailing. SWEPCO's Exceptions at 14. The inquiry in that case was whether SWEPCO acted prudently in making environmental retrofits to an existing plant in 2011. *Application of Southwestern Electric Power Company for Authority to Change Rates*, Docket No. 46449, Order on Rehearing at 15, FoFs 41-42 (Mar. 19, 2018). That finding says nothing about whether it would be reasonable to include a carbon-tax assumption in this forward-looking CCN case in 2020. Notably, SWEPCO raised this same argument regarding Docket No. 46449 in *Wind Catcher*, but that did not stop the Commission from rejecting its carbon-tax assumption. Docket No. 47461, PFD at 32.

[113] TIEC Ex. 1, Pollock Dir. at 27.

[114] *Id.*; TIEC Ex. 2, Griffey Dir. at 39.

[115] TIEC Ex. 2, Griffey Dir. at 38. Moreover, SWEPCO's treatment of the carbon burden is also one-sided—as the PFD notes, SWEPCO's AURORA modeling remarkably shows the same amount of wind penetration in every case, regardless of gas prices or whether there's a carbon burden. PFD at 42.

[116] PFD at 116, FoF 66.

solar have little or no marginal cost and, in the case of wind projects, are able to bid into the market at negative prices.[117] Consequently, assuming more renewable resources in a model will put downward pressure on the LMPs that the model projects.[118] Understating renewable generation thus will cause the model to overstate LMPs and, in turn, overstate production-cost savings.[119]

The primary model SWEPCO used to derive its LMPs was AURORA,[120] which assumed 28.9 GW of renewable generation capacity in 2029.[121] SWEPCO witness Johannes Pfeifenberger testified that there was already approximately 21.7 GW of wind and solar generation in the SPP footprint at the time he submitted his direct testimony last summer.[122] Thus, SWEPCO assumed in its AURORA model that renewables in SPP would grow by only 7.2 GW in the next decade. As a point of comparison, wind generation in the SPP ***more than doubled*** from 2014 to 2018, increasing from 8.6 GW to 20.6 GW.[123] The evidence—including the large amount of renewable capacity that is already in the SPP interconnection queue[124] and EIA's renewable-growth projections—supports the ALJs' finding that SWEPCO understated renewables in its analysis.

SWEPCO's response is to repeatedly state that it relied on the PROMOD models developed by SPP in its 2019 Integrated Transmission Planning (ITP) process.[125] As noted, however, the primary model that affects power prices is not PROMOD—which is used merely to set percentage differentials and to model congestion costs—but AURORA.[126] Moreover, as discussed below, the

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[117] Tr. at 338:25-339:3 (Sheilendranath Cross) (Feb. 25, 2020).

[118] TIEC Ex. 1, Pollock Dir. at 28; TIEC Ex. 2, Griffey Dir. at 35-37. For the purpose of projected congestion costs, the relevant model is PROMOD, as explained in greater detail below.

[119] TIEC Ex. 2, Griffey Dir. at 35.

[120] SWEPCO Ex. 5, Bletzacker Dir. at 3-6.

[121] SWEPCO Ex. 20, Rebuttal Testimony of Johannes P. Pfeifenberger at 7 (Pfeifenberger Reb.).

[122] SWEPCO Ex. 9, Pfeifenberger Dir. at 8 (showing 250 MW of solar generation); *id.* at 19 (showing 21.4 GW of wind generation).

[123] TIEC Ex. 51.

[124] TIEC Ex. 1, Pollock Dir. at 29-31.

[125] SWEPCO's Exceptions at 15-18.

[126] *See, e.g.*, SWEPCO Ex. 20, Rebuttal Testimony of Johannes P. Pfeifenberger at 22-23 (Pfeifenberger Reb.).

evidence shows SWEPCO's reliance on the ITP process as a "King's X" is no more effective in this case than it was in *Wind Catcher*, in which SWEPCO also relied on the SPP ITP to model renewable-energy growth[127] but the Commission found that SWEPCO had understated renewable generation.[128]

SWEPCO also spends much of its exceptions arguing about the impact of the understatement of renewables,[129] though its arguments miss the point. TIEC is not requesting that the Commission make a finding on the amount by which SWEPCO understated renewables growth or the specific impact of that error. Indeed, to obtain a precise quantification, one would have to run the modeling with more reasonable renewable-generation assumptions. TIEC's point is that SWEPCO has failed to meet it burden of proof on this issue, and that its modeling is therefore unreliable. The ALJs recognized this,[130] and the Commission should adopt the PFD on these points.

(a) No New Wind Generation After 2020

One obvious red flag with Mr. Bletzacker's AURORA modeling is that he assumes that no new wind will be added to the SPP after 2020.[131] As the PFD found,[132] this assumption is unreasonable because it not only ignores the ongoing buildout of wind generation occurring in the

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[127] Docket No. 47461, PFD at 33.

[128] TIEC Ex. 5 at 5-6 & 19, FoFs 99, 99A

[129] SWEPCO's Exceptions at 19-22.

[130] PFD at 47-49 & 116, FoF 68.

[131] TIEC Ex. 2, Griffey Dir. at 35; TIEC Ex. 45; TIEC's In. Br. at 37. Instead, Mr. Bletzacker assumes that wind capacity will stay completely flat, with any retired units being repowered in place. TIEC Ex. 45; Tr. at 270:23:271:4 (Bletzacker Cross) (Feb. 24, 2020).

[132] PFD at 41-42. TIEC notes that the PFD appears to misstate the level of wind assumed by the AURORA model for 2020, which is approximately 24.4 GW, not 21.4 GW. *Id.* However, this is ultimately irrelevant because neither is a reasonable assumption for a level of wind penetration that will stay flat for thirty years.

SPP,[133] but also the Traverse and Maverick projects themselves, which are scheduled to come online in 2021 and would add 1,286 MW of nameplate capacity to SPP.[134]

SWEPCO does not dispute that its AURORA modeling assumes that wind capacity in the SPP will stay flat for thirty years after 2020. Instead, SWEPCO contends that the wind capacity shown for 2020 in AURORA (24.4 GW) is similar to the wind capacity that the SPP's 2019 ITP assumed for 2029 (24.6 GW).[135] As an initial matter, this comparison says nothing about years 2030 to 2051. Moreover, this argument assumes that the SPP's ITP forecast that SWEPCO cites is a reliable indicator of the future amount of wind in the SPP. The evidence shows that it is not.

First, actual wind development has significantly outpaced what the SPP ITP process has projected in the past. For instance, in *Wind Catcher*, SWEPCO used the 2017 ITP model, which projected 17,080 MW of wind in 2020 and 17,500 MW in 2025.[136] As noted above, however, there was already 20,600 MW of wind in the SPP as of the end of 2018.[137] Thus, by 2018, actual wind development had exceeded the 2017 ITP projection for 2025 by over 3 GW.

Second, SWEPCO cites to the SPP 2019 ITP's Future 1 model. But as the PFD found, SPP also develops a Future 2 model that assumes a higher level of renewable penetration that is more in line with expectations. Specifically, Future 2 assumes 27 GW of wind capacity in 2024 and 30 GW in 2029, as compared to the 24.2 GW and 24.6 GW assumed for those years in Future 1.[138] While SWEPCO repeatedly touts SPP's Future 1 in its exceptions, AEP representatives participating in the SPP planning process have stated that: "SPP's own wind projections show that

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[133] TIEC Ex. 51.

[134] SWEPCO Ex. 2, Direct Testimony of Thomas P. Brice at 6 (Brice Dir.) The Sundance facility is scheduled to come online in 2020. *Id*

[135] SWEPCO's Exceptions at 15-16.

[136] Docket No. 47461, PFD at 33. The SPP ITP is a long-term transmission planning process; in each ITP, two future years are studied and modeled in PROMOD.

[137] TIEC Ex. 51.

[138] TIEC Ex. 52.

Future 2 aligns with the expected reality—this region will likely have over 30 GW of wind in the not distant future."[139]

Third, since SWEPCO conducted its modeling, SPP has developed its assumptions for the 2020 ITP and they have increased from the 2019 version. For example, the 2020 ITP Future 1 model assumes 26 GW of wind in 2025 and 28 GW in 2030,[140] representing increases of 1.8 GW and 3.4 GW over the 2019 Futures 1 assumptions for those years, respectively.[141]

SWEPCO's citation to the SPP ITP (and in particular the projection that assumes the lowest amount of future wind generation) thus does not demonstrate that the renewable-generation growth it assumed in its AURORA modeling is reasonable.[142]

(b) The SPP Generation Interconnection Queue

As the ALJs found, the SPP Generation Interconnection Queue demonstrates that SWEPCO's renewable resource assumptions are too low.[143] Mr. Pollock included the following chart in his testimony, which shows over 114 MW of total renewable-generation interconnection requests in the generation queue as of December 23, 2019:

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[139] TIEC Ex. 55.

[140] TIEC Ex. 54.

[141] The 2020 ITP Future 2 model assumes 30 GW of wind in 2025 and 33 GW in 2030. TIEC Ex. 53.

[142] SWEPCO also takes issue with a sentence in the PFD that states that SWEPCO assumes no growth in renewables after 2020. However it is clear from the rest of the PFD, including the header of this section, that the PFD meant that SWEPCO assumes no growth in *wind generation* after 2020. And the fact that SWEPCO assumes solar additions in its modeling does not change the fact that it vastly understated the likely amount of future wind generation—and total renewable generation—in the SPP.

[143] PFD at 44.

Table 7 SPP Generation Interconnection Queue Active Requests For Renewable Generation* As of December 23, 2019	
Scenario	**Nameplate Capacity (MW)**
Total Requests	114,141
GIA Fully Executed On Schedule	9,956
Facility Study Stage	11,073
DISIS Stage	70,754
Source: SPP, GI Active Request * Wind, Solar, Battery Storage.	

As Mr. Pollock testified, if the 10 GW of renewable resources with executed GIAs shown in the chart above are constructed, along with ***only half*** of the capacity in the Facility Study Stage, and ***absolutely none*** of the capacity in the DISIS stage, the result would be more than 15 GW in new renewable generation.[144] This is more than double the 7.2 GW of renewable growth that SWEPCO assumed in its AURORA model by 2029, which provides a clear indication that SWEPCO has understated renewable generation in its modeling. The ALJs agreed, and found that Mr. Pollock's analysis regarding the potential for 15 GW of new renewable capacity to be "conservative."[145]

SWEPCO's exceptions have no answer for these determinations. Primarily, SWEPCO repeats its arguments that the PFD improperly "second guesses" the SPP ITP process in finding that SWEPCO understated renewable generation.[146] But as discussed above, those arguments are without merit.

SWEPCO's contentions regarding the amount of solar generation in its modeling fare no better. Specifically, SWEPCO argues that its models assume more solar capacity than is currently

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[144] *Id.*; *see also* TIEC Ex. 1, Pollock Dir. at 30.

[145] PFD at 43-44.

[146] SWEPCO's Exceptions at 16.

included in the queue,[147] and that this somehow solves the problem with undercounting wind. SWEPCO is incorrect. First of all, as indicated in the above Table 7, Mr. Pollock's analysis of the queue is based on all renewable-generation sources, including wind, solar, and other sources. Thus, the evidence shows that SWEPCO has understated renewable generation ***as a whole***, not just that it has understated wind. Moreover, SWEPCO's argument overlooks the fact that the queue represents a snapshot in time, and Mr. Pollock looked only to active interconnection requests as of December 2019. Consequently, his analysis only identified projects that were contemplated at that time, some of which are deep in the planning process. For example, Mr. Pollock testified that the 10 GW of capacity identified in the GIA stage in Table 7 represents projects that are on schedule to be completed from 2019 to 2021.[148] Needless to say additional renewable projects—including solar projects—can and will be proposed over the life of the Wind Facilities. SWEPCO's arguments regarding its solar assumptions do not change the fact that it understated renewable-growth in its modeling.

(c) EIA Projections

The 2020 EIA AEO projections of future renewable penetration in the SPP also demonstrate that SWEPCO's assumptions are understated. EIA's projections far exceed SWEPCO's, as demonstrated in the following chart TIEC included in its initial brief:

[147] *Id.* at 17.

[148] TIEC Ex. 1, Pollock Dir. at 30.

Source	2024 (GW)	2029 (GW)	2049 (GW)
2020 EIA AEO[149] (Reference Case)	38.1	50.3	64.1
SWEPCO AURORA Modeling[150]	27.8	28.9	28.2
SWEPCO PROMOD Modeling[151]	28.2	30.6	N/A

As the ALJs concluded, "the EIA's projections are a reliable indication that, over the life of the [Wind Facilities], renewable resources are likely to proliferate beyond the 30 GW in SWEPCO's models."[152] In its exceptions, SWEPCO's only response is to again invoke its misplaced reliance on assumptions in the SPP 2019 ITP, which TIEC has addressed above.[153]

(d) LMP Projections and Implied Heat Rates

Given the multiple flaws in its modeling, which include understating future renewable growth as discussed throughout this section, it is unsurprising that SWEPCO projects high and ever-increasing LMP prices.[154] The ALJs noted that SPS's projection of ever-escalating LMPs is inconsistent with historical trends.[155] SWEPCO quibbles with this in its exceptions, arguing that SPP LMPs have increased since 2015.[156] However, the following chart from SPP's 2018 State of

[149] TIEC Exs. 76, 77. For each listed year, the EIA AEO figure is the total of the renewable generation shown on these two exhibits for the three SPP regions. For example in 2024, the EIA projects 13.1 GW and 9.7 GW, respectively, for SPP Central and North (TIEC Ex. 76), and 15.3 GW for SPP South (TIEC Ex. 77). 13.1+9.7+15.3=38.1.

[150] SWEPCO Ex. 20, Pfeifenberger Reb. at 7 (showing 2024 and 2029 assumptions); TIEC Ex. 44 (showing 2049 assumptions).

[151] SWEPCO Ex. 20, Pfeifenberger Reb. at 7. Because PROMOD was only run for 2024 and 2029, there are no wind assumptions for any other years.

[152] PFD at 45.

[153] SWEPCO's Exceptions at 18.

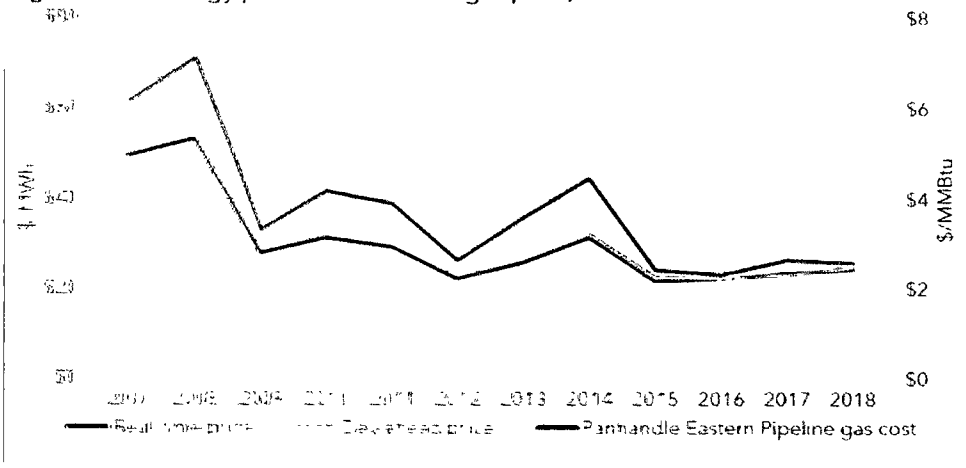
[154] TIEC Ex. 1, Pollock Dir. at Ex. JP-3.

[155] PFD at 46.

[156] SWEPCO's Exceptions at 19.

the Market Report clearly indicates that the LMPs can fluctuate from year to year and do not constantly increase:[157]

Figure 4–1 Energy price versus natural gas price, annual



(e) Impact of Undercounting Renewable Additions

The impact of understating future renewable generation in the modeling is to increase the assumed LMPs, and thus overstate the production-cost savings the Wind Facilities would achieve.[158] As the ALJs found, this is particularly true with respect to undercounting wind generation, as such generation would tend to run (and drive down LMPs) during the windiest hours, which are also times when the Wind Facilities will likely be running.[159] Indeed, when wind is on the margin in the SPP, LMPs are generally negative due to PTCs.[160] A plant generating during an hour with negative prices "avoids" less energy costs than a plant generating during a peak hour with high LMPs. Additionally the relationship between wind penetration and LMPs is non-linear: the more wind is added, the more often wind will be on the margin, and the more times there will be zero or negative LMPs.[161] This non-linear relationship cannot be captured by

[157] SWEPCO Ex. 20A, Workpapers to the Rebuttal Testimony of Johannes P. Pfeifenberger at WP "2018 annual state of the market report.pdf" at 106 (Pfeifenberger Reb. Workpapers).

[158] TIEC Ex. 1, Pollock Dir. at 28-29.

[159] PFD at 48-49, FoF 68.

[160] Tr. at 335:10-336:1 (Sheilendranath Cross) (Feb. 25, 2020).

[161] *See* SWEPCO Ex. 20A, Pfeifenberger Reb. Workpaper at WP "LBNL Study_wind_and_solar_impacts_on_wholesale_prices_approved.pdf" at 37-38 ("While negative prices were nearly

extrapolation techniques like the ones SWEPCO employed in attempting to demonstrate the impact of additional wind. Thus, to truly capture the impact of understating renewable-generation in the analysis, one would have to rerun the models with proper assumptions.[162] The ALJs recognized this, noting that assessing the impact of additional wind generation "requires more nuance than simply comparing a certain number of watts to the LMPs."[163] SWEPCO's failure to include reasonable assumptions regarding future renewable-generation growth renders its modeling unreliable and means that it cannot meet its burden of proof in this case.

Nevertheless, SWEPCO reasserts in its exceptions two analyses considered and rejected by the PFD in an attempt to minimize the impact of understating wind. The first analysis, conducted by Mr. Pfeifenberger, compares SWEPCO's PROMOD modeling that it used to evaluate congestion costs in this case with the PROMOD modeling it used during the RFP process, which included an additional 3,400 MW of wind from the bidders in the RFP.[164] Mr. Pfeifenberger then compared average LMPs between the two runs.[165] Second, Mr. Pfeifenberger relied on a Lawrence Berkeley National Lab (LBNL) study that analyzed the impact on average LMPs for each percentage increase of wind penetration.[166] Mr. Pfeifenberger multiplied this rate by the increased wind penetration from assuming 3,400 MW of additional wind to calculate its impact on average LMPs.[167]

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nonexistent in the Oklahoma region of SPP in 2011, irrespective of system-wide load and wind generation, by 2017 negative prices occurred in nearly 40% of the hours when wind was generating above 50% of its nameplate capacity and load was below 50% of its peak level. Even when load was high in 2017, prices were sometimes negative when wind output was high. In contrast, in 2015, negative prices were unlikely to occur if the demand was high, regardless of the level of wind generation.").

[162] *See, e.g.,* PFD at 48. As one potential measure of the impact of understating renewables, TIEC presented an implied heat rate analysis. TIEC In. Br. at 46-47. The PFD does not accept that analysis, which in any event overlapped with a quantification of SWEPCO's overstatement of natural gas prices. However, TIEC's primary position throughout the case has simply been that SWEPCO has not met its burden of proof to show that its modeling assumptions on renewable-generation are reliable.

[163] PFD at 48-49.

[164] SWEPCO's Exceptions at 20; SWEPCO Ex. 20, Pfeifenberger Reb. at 9-10.

[165] SWEPCO's Exceptions at 20; SWEPCO Ex. 20, Pfeifenberger Reb. at 9-10.

[166] SWEPCO's Exceptions at 20; SWEPCO Ex. 20, Pfeifenberger Reb. at 10-11.

[167] SWEPCO's Exceptions at 20; SWEPCO Ex. 20, Pfeifenberger Reb. at 10-11.

The first flaw with SWEPCO's analyses is that they only assume 3,400 MW of additional wind. SWEPCO contends that this is a reasonable amount to assume, as the difference between the amount of wind it assumed in its PROMOD modeling (25.6 GW) and the amount of wind assumed for 2029 in Future 2 (30 GW) is 4,400 MW.[168] As an initial matter, this comparison is based on the faulty premise that the PFD endorsed the 2019 ITP Future 2 case as the correct amount of future wind capacity.[169] The PFD's finding is simply that Future 2 "more accurately" represents expected wind penetration than Future 1.[170] And as explained above, the evidence, including the SPP interconnection queue, the EIA, and the SPP's more recent ITP Future 2 case, all indicate a much higher level of renewable penetration than the 2019 Future 2 case.[171]

Additionally, these analyses do not adequately account for the impact of additional wind generation because they focus on average LMPs, not the effect on the LMPs that would occur during the hours in which the Wind Facilities are running. While SWEPCO points out that PROMOD models hourly prices, and the LBNL study did as well, those facts are irrelevant because Mr. Pfeifenberger simply compared annual average LMPs in his analyses. As can be seen his testimony, Mr. Pfeifenberger's PROMOD analysis looked at the impact on the "Simple Average LMP."[172] And for the LBNL study, Mr. Pfeifenberger looked at the impact of renewable penetration on "Annual Average Wholesale Prices."[173] In other words, Mr. Pfeifenberger looked at the average impact of additional wind on LMPs during all hours of the year. However, what is relevant is the impact on LMPs during the hours in which the Wind Facilities will run, which also tends to be the hours in which other wind projects will run, as the PFD concluded.[174] Accordingly,

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[168] SWEPCO's Exceptions at 20.

[169] *Id.*

[170] PFD at 116, FoF 65.

[171] Additionally, the relevant comparison is not what SWEPCO assumed in its PROMOD modeling, but what it assumed in its AURORA modeling, which was used to develop the LMPs. SWEPCO Ex. 5, Bletzacker Dir. at 3-6. As noted above, SWEPCO assumed 24.4 GW of wind in its AURORA modeling, and held that constant throughout the study period. TIEC Ex. 45. Accordingly, the difference between AURORA and the 2019 SPP ITP Future 2 is 5.4 GW in 2029, and is likely significantly higher in the years thereafter.

[172] SWEPCO Ex. 20, Pfeifenberger Reb. at 10, Figure 2.

[173] *Id.* at 11, Figure 3.

[174] PFD at 116, FoF 68.

the PFD correctly found that the two analyses SWEPCO presented did not demonstrate that assuming a more reasonable amount of wind penetration will have a limited impact on the economics of the Wind Facilities.[175]

c. Capacity Factor

SWEPCO claimed in this case that the median expected performance level of the Wind Facilities (P50) was 44.01%.[176] The PFD found that SWEPCO's purported P50 production level was not the actual P50 level, because SWEPCO failed to properly take into account force majeure events, mechanical failures, and curtailments that would reduce the expected performance of the Wind Facilities. The PFD specifically found that "[t]he actual median of expected energy production of the SWFs is lower than [SWEPCO's] P50 level."[177] SWEPCO, the party with the burden of proof, failed to show the effect of correcting for the errors in its P50 calculation. Nor did SWEPCO introduce evidence of the economics of the Wind Facilities at any P-levels other than its erroneous P50 level and its "guaranteed" (but still subject to force majeure and economic curtailments) P95 level.[178] Given that the only options in the record were SWEPCO's erroneous and overstated P50 level and its guaranteed P95 level, it was entirely proper for the ALJs to note that the economics should be evaluated at the P95 level. It is important to note, however, that the proposed Wind Facilities are uneconomic even under SWEPCO's artificially inflated P50 capacity factor, as TIEC has laid out throughout testimony and briefing.[179]

SWEPCO based its claimed P50 performance level entirely on a study by Simon Wind. But that study did not take into account curtailment risk or force majeure events, which the PFD found were both "real and asymmetrical."[180] For instance, the evidence showed that SWEPCO's

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[175] *Id.* at 48-49.

[176] SWEPCO Ex. 8B, Workpapers to the Direct Testimony of John F. Torpey at WP "Updated Torpey Benefits Model Final.xslx," Tab "Combined P-Values" (Torpey Dir. Workpapers).

[177] PFD at 116, FoF 70.

[178] Notably, SWEPCO only conducted analyses at the P50 and P95 levels, despite the fact that its wind consultant, Simon Wind, also provided P75 and P90 capacity factors. SWEPCO Ex. 3, Godfrey Dir. at Ex. JFG-6 at 58, 110, 204.

[179] TIEC Ex. 2, Griffey Dir. at 45; TIEC's In. Br. at 65-68.

[180] PFD at 52.

existing wind PPAs in Oklahoma have experienced significant economic curtailment in recent years,[181] and that a schedule in SWEPCO's PSA for the Traverse wind farm specifically noted that it sat in the migration path of the federally protected whooping crane.[182] Thus, even under its asserted standard of "more probable than not," SWEPCO did not demonstrate that the P50 capacity factor should be used.

SWEPCO contends that its consultant's wind analyses adequately took into account curtailment and force majeure,[183] but this is demonstrably false. The Simon Wind reports state on their face that curtailment and force majeure were excluded in calculating the P50 capacity factor. First, the reports include the disclaimer that the calculated P-values assume that "turbines are operated and maintained according to the manufacturer specifications ***with no major mechanical defects***, and ***all curtailment is reimbursed***."[184] Additionally, the reports show that while certain weather-related events were taken into account, such as lightning, icing, or extreme temperatures, no loss factors were applied to account for curtailment, whether that be due to economic reasons or force majeure events like "noise, shadow flicker, animal activity/migration, military operations, etc."[185] SWEPCO witness Mr. Godfrey admitted on the stand that the wind reports did not apply loss factors for curtailment.[186] SWEPCO points to the fact that the studies analyzed curtailment in developing confidence intervals,[187] but those confidence intervals were only used to develop the other P-values, not the median P50.[188] SWEPCO's wind reports do not support SWEPCO's

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[181] *Id.* at 50; TIEC Ex. 18 (HSPM).

[182] SWEPCO Ex. 3B, Godfrey Highly Sensitive and Voluminous Exhibit JFG-3 at Ex. JFG-3 Traverse at 625 (Godfrey HS Dir.) (Declassified).

[183] SWEPCO's Exceptions at 26.

[184] SWEPCO Ex. 3, Godfrey Dir. at Ex. JFG-6 at 58 (Traverse), 110 (Maverick), 204 (Sundance) (emphasis added).

[185] SWEPCO Ex. 3, Godfrey Dir. at Ex. JFG-6 at 54 (Traverse), 105 (Maverick), 200 (Sundance).

[186] Tr. at 188:8-189:9 (Godfrey Cross) (Feb. 24, 2020).

[187] SWEPCO's Exceptions at 26.

[188] The confidence intervals were analyzed as part of a "probability analysis" that developed the probability distribution from the mean (i.e., the P50), which resulted in the other P-values. SWEPCO Ex. 3, Godfrey Dir. at Ex. JFG-6 at 57-58 (Traverse), 108-09 (Maverick), 203-04 (Sundance).

assertion that the purported P50 value of 44.01% represents a median outcome, and the PFD properly found that it did not.

d. Useful Life

The PFD correctly determined that SWEPCO did not meet its burden of proving that a 30-year useful life was an appropriate assumption for evaluating the economics of the Wind Facilities, as opposed to the 25-year useful life that SWEPCO assumed for the Wind Catcher project proposed just two years earlier, and that are used for SPS's Hale and Sagamore plants.[189] SWEPCO's extension of the useful life of the Wind Facilities is important, as the last five years provide approximately a third of the purported benefits on an NPV basis under SWEPCO's low/no carbon case.[190] The PFD recognized that, given the understatement and uncertainty of projected ongoing capital and O&M during the later years of the project, it is not reasonable to assume a 30- year life in assessing the economics of the Wind Facilities.

As SWEPCO acknowledges in its exceptions, achieving a 30-year useful life depends heavily on ongoing capital and O&M expenses.[191] SWEPCO asserts that no party has challenged SWEPCO's ability to fund ongoing capital and O&M.[192] But this argument ignores the question of whether the cost to extend the useful life is likely to make economic sense. Further, what is relevant for the purposes of this proceeding is not merely whether the useful life of the Wind Facilities can conceivably be extended to 30 years, but whether the ongoing capital and O&M costs necessary to achieve that useful life were appropriately accounted for in the economic analysis. SWEPCO's forecast of ongoing capital and O&M (neither of which are included in its Cost Cap Guarantee) is understated, and therefore does not account for the cost of extending the

[189] Docket No. 46936, Supplemental Stipulation Testimony of David T. Hudson at Attachment DTH-SS-2 (Apr. 19, 2018). SPS also proposed a 25-year useful life for Hale in its most recent rate case. TIEC Ex. 1, Pollock Dir. at 13.

[190] *Compare* TIEC Ex. 2, Griffey Dir. at 45 & n.69 (stating $73 million NPV benefits for the last five years of the low/no carbon case) *with* SWEPCO Ex. 8, Torpey Dir. at Ex. JFT-3 at 5 (showing $236 million NPV total in low/no carbon case).

[191] SWEPCO's Exceptions at 27.

[192] *Id.*

useful life of the Wind Facilities to 30 years. Accordingly, the PFD properly found that it is not appropriate to assume a 30-year useful life in analyzing the economics of the Wind Facilities.

The evidence showed that the Wind Facilities would use the same turbine manufacturer (GE Renewables North America LLC) and platform (GE 2 MW) as Wind Catcher, and that the majority of the turbines would be the same tower height (88.6m) and rotor diameter (127 meters).[193] Nevertheless, SWEPCO assumed that the Wind Facilities would last 30 years, rather than the 25 years that SWEPCO used for its Wind Catcher analysis.[194]

With a longer useful life, higher capital and O&M costs would be expected. Apart from an analysis by the turbine manufacturer not backed by any sort of warranty or assurances,[195] SWEPCO's primary support for its 30-year useful life assumption is a survey of industry participants conducted by LBNL.[196] One of SWEPCO's witnesses in this case, Mr. Godfrey, was a respondent to that survey.[197] In his response, he explained that the wind manufacturers AEP contacted prior to issuing the RFP that resulted in this very project stated that a 30-year useful life "was achievable but the [sic] of course we could expect O&M might be higher in the later years which seemed appropriate."[198]

While SWEPCO created its capital and O&M forecasts in the manner described in its exceptions,[199] that is only true for the first ten years. For years 11 through 30, it simply escalated the year 10 capital expenditures and the year 10 O&M by a 2% inflation rate, thereby holding

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[193] TIEC Ex. 1, Pollock Dir. at 14.

[194] *Id.* at 13.

[195] TIEC Ex. 1A, HS Pollock Dir. at 15 (noting short warranty period for the turbines).

[196] SWEPCO Ex. 16, Rebuttal Testimony of Joseph G. DeRuntz at Ex. JGD-2R (DeRuntz Reb.); *see also* SWEPCO's Reply Br. at 39.

[197] TIEC Ex. 74.

[198] *Id.*; *see also* Tr. at 727:14-22 (DeRuntz Cross) (Feb. 26, 2020); SWEPCO Ex. 16, DeRuntz Reb. at Ex. JGD-2R at 6.

[199] SWEPCO's Exceptions at 30.

those costs flat in real terms.[200] As a result, SWEPCO's ongoing capital and O&M forecast understates the amount of ongoing capital and O&M necessary to extend the life of the Wind Facilities.[201] Indeed, that same LBNL survey noted that its assumption of only escalating O&M by inflation was a reason why its analysis likely overestimated the benefit of extending useful lives.[202]

Given that SWEPCO failed to account for the heightened ongoing capital and O&M costs expected with extending the useful life of the Wind Facilities, and that it is uncertain how much more those costs will be, the ALJs correctly concluded that a 25-year useful life should be assumed in this case, as it has been in the other CCNs for wind projects that have come before this Commission. With significant uncertainty surrounding not only market energy prices, but also the cost of operating the Wind Facilities in years 26 to 30, any purported benefits that far into the future are purely speculation. As the PFD noted, it is possible that the amount of ongoing capital and O&M for those years may exceed the benefits during these later years.[203] Yet, the last five years account for a third of the savings (NPV) under SWEPCO's low/no carbon case.[204] The Wind Facilities should not be approved based on speculative benefits that might accrue to ratepayers in 2046 to 2051. The PFD properly found that the Wind Facilities should be evaluated using a 25-year useful life.

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[200] SWEPCO Ex. 4, DeRuntz Dir. at 17-18. SWEPCO argues that the PFD erred by stating that O&M costs were held flat when they were escalated with inflation. SWEPCO's Exceptions at 30. It is apparent that the PFD meant that O&M costs were flat in real terms, as TIEC made clear throughout its briefing. TIEC's In. Br. at 62.

[201] PFD at 76.

[202] SWEPCO Ex. 16, DeRuntz Reb. at Ex. JGD-2R at 7. SWEPCO argues that the PFD inappropriately relied on this statement from the LBNL study, but the statement makes clear that the study is acknowledging that it overstated the benefits of extended useful lives because it simply scaled O&M with inflation and not a higher rate consistent with the reality that O&M costs increase as a generating plant gets older. SWEPCO's Exceptions at 28.

[203] PFD at 56.

[204] *Compare* TIEC Ex. 2, Griffey Dir. at 45 & n.69 (stating $73 million NPV benefits for the last five years of the low/no carbon case) *with* SWEPCO Ex. 8, Torpey Dir. at Ex. JFT-3 at 5 (showing $236 million NPV total in low/no carbon case).

e. Congestion and Losses and Gen-tie

The PFD found that SWEPCO underestimated the cost of congestion in its economic analysis because (1) it failed to account for the understatement of congestion inherent in PROMOD; (2) it held congestion costs flat in nominal terms after 2029; (3) it did not consider the cost of a future gen-tie in its base case analysis; and (4) its high congestion (gen-tie) case understates the economic cost of a gen-tie. SWEPCO's exceptions do nothing to call these findings into question.

SWEPCO's analysis fails to account for the inherent limitations in PROMOD that cause congestion costs to be underestimated.

As the PFD found, it is undisputed that PROMOD, the model that SWEPCO used to forecast future congestion costs, undercounts congestion.[205] Multiple SWEPCO witnesses testified to this fact.[206] One of SWEPCO's witnesses, Mr. Pfeifenberger, also testified in the *Wind Catcher* proceeding. In that case, he compared the Wind Catcher project, with its dedicated gen-tie, to a "Generic Wind" case where the same amount of MWs was procured from various wind projects across the SPP using the SPP transmission system.[207] In evaluating the Generic Wind case, Mr. Pfeifenberger included a 5% curtailment adjustment to account for PROMOD's undercounting of congestion costs.[208] However, in this case, where Mr. Pfeifenberger is testifying in support of a project that purports to use the SPP transmission system, he did not include such a curtailment adjustment. SWEPCO's justification for not doing so is that the Wind Facilities are in a strong area of the SPP transmission system, as opposed to the "Generic Wind" case, which was distributed across the SPP.[209] To support this contention, SWEPCO cites the deliverability analyses it conducted during the RFP process, but does not explain how this analysis eliminates the need to consider curtailment, particularly when it subjected the bids to an additional analysis

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[205] PFD at 58 & 117, FoF 83.

[206] SWEPCO Ex. 7, Ali Dir. at 5; SWEPCO Ex. 9, Pfeifenberger Dir. at 5.

[207] TIEC Ex. 65 at 5.

[208] *Id.* at 22, JPP-2 at 4.

[209] SWEPCO's Exceptions at 32-33.

that included 50% consideration of a dedicated gen-tie to reduce prospective curtailments.[210] Further, the evidence shows that SWEPCO's existing wind PPAs in central Oklahoma have experienced curtailment in recent years.[211]

SWEPCO also makes the argument that the understated congestion costs are accounted for in its high congestion (gen-tie) case because that case acts as an upper limit on possible congestion costs.[212] This is similar to SWEPCO's argument, addressed below, that it is reasonable to hold its congestion costs flat after 2029 because if it did not, building a gen-tie would be economic. If SWEPCO's response to any argument that it has not adequately accounted for congestion is that it can build a gen-tie to cap congestion costs, then the gen-tie case should be evaluated as the primary case, as the PFD recommended.[213]

SWEPCO's understated congestion costs by holding them flat after 2029.

In SWEPCO's base congestion (no gen-tie) case, it held congestion flat in nominal terms starting in 2029, despite also assuming ever-increasing power prices.[214] This is an extraordinary assumption because congestion costs, simply as a matter of how they are calculated, are directly related to power prices.[215] SWEPCO justified this assumption based on its expectation that the SPP will advance transmission solutions that become cost-effective when congestion reaches the $9-10/MWh level.[216] As the PFD recognized, there are several problems with this assumption.

First, this assumes that the SPP will advance the necessary transmission upgrades, even though Mr. Pfeifenberger testified that "[w]hether and when SPP would identify and approve such further [transmission] upgrades is uncertain . . . ."[217] Indeed, if SPP transmission upgrades were

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[210] SWEPCO Ex. 8, Torpey Dir. at 14.

[211] PFD at 50; TIEC Ex. 18 (HS).

[212] SWEPCO's Exceptions at 32.

[213] PFD at 118, FoFs 89-90.

[214] TIEC Ex. 2, Griffey Dir. at 41-42.

[215] Tr. at 317:11-15 (Sheilendranath Cross) (Feb. 23, 2020).

[216] SWEPCO's In. Br. at 34-35.

[217] SWEPCO Ex. 9, Pfeifenberger Dir. at 35.

certain, SWEPCO would not have required its bidders to also consider the cost of a dedicated gen-tie line.[218]

Moreover, SWEPCO did not demonstrate that $9-10/MWh was a reasonable level at which congestion costs would be capped. The $9-10/MWh figure was presented by SWEPCO witness Mr. Sheilendranath during cross-examination at the hearing, and he stated that the source was an academic study.[219] Mr. Pfeifenberger later admitted that he had cited that same study in the *Wind Catcher* proceeding, and that the study in fact concluded that the cost of transmission solutions was in the range of $10/MWh to $20/MWh.[220] The $20/MWh was not specific to Wind Catcher, as SWEPCO asserts, and SWEPCO never demonstrated why it was reasonable to only look at the bottom end of this range in evaluating the Wind Facilities, and ignore the possibility that transmission solutions could be twice as expensive.

Further, even if the assumption of flat congestion costs is based on the cost of transmission solutions, then it is still necessary to escalate by the inflation rate, as SWEPCO did with O&M costs.[221] However, SWEPCO held congestion costs flat in nominal terms, contending that this was reasonable because of technological improvements.[222] But as Mr. Griffey testified, it is wholly inconsistent for SWEPCO to assume that future technology will limit increases in the cost of transmission, but not the cost of generation.[223]

Finally, SWEPCO notes that it presented a high congestion (gen-tie) sensitivity case, which puts a cap on the congestion costs if the SPP does not sufficiently advance transmission upgrades,[224] or if congestion costs escalate with inflation.[225] Again, if SWEPCO is undercounting

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[218] SWEPCO Ex. 8, Torpey Dir. at 14.

[219] Tr. at 322:9-22; 339:22-340:1 (Sheilendranath Cross) (Feb. 25, 2020).

[220] Tr. at 485:1-15 (Pfeifenberger Cross) (Feb. 25, 2020).

[221] SWEPCO Ex. 4, DeRuntz Dir. at 17-18.

[222] TIEC Ex. 2, Griffey Dir. at 41-42.

[223] *Id.* SWEPCO's Fundamentals Forecast shows ever-increasing energy prices. TIEC Ex. 1, Pollock Dir. at Ex. JP-3.

[224] SWEPCO's Exceptions at 34.

[225] *Id.* at 35.

congestion costs based on its assumption that if they were any higher, it would build a gen-tie, then the cost of the gen-tie needs to be factored into the analysis.

SWEPCO's gen-tie case should be considered, and the economics of the Wind Facilities are even more dismal under a gen-tie scenario.

Because the evidence shows that SWEPCO's base congestion (no gen-tie) case significantly understates congestion, the high congestion (gen-tie) case should be assumed. SWEPCO's exceptions only make this more apparent, as its arguments for why it did not undercount congestion costs, as the PFD found, all fall back on its contention that its high congestion (gen-tie) case acts as an upper bound on congestion costs.

In its high congestion (gen-tie) case, SWEPCO assumed that a 184-mile, $480 million gen-tie is placed in service in 2027,[226] and that congestion costs are zeroed out starting that same year.[227] SWEPCO estimates a $233 million NPV revenue requirement associated with the gen-tie.[228] As the PFD found, SWEPCO did not demonstrate that this estimate was reliable, and it should be viewed as a low-end estimate of the cost of the gen-tie.

First, SWEPCO acknowledges that the estimate is preliminary, and that there is no routing plan or project timeline.[229] Routing for a project of this length is highly uncertain; for instance, the gen-tie for the Wind Catcher project saw its proposed route increase in length from 350 miles to 380 miles due to concerns from landowners and the Osage Nation.[230] Second, SWEPCO assumes that the gen-tie will be depreciated over 60 years, despite the fact that it will be built to serve only the then-remaining 20 year life of the Wind Facilities (or, even under SWEPCO's 30-year assumed useful life, the remaining 25 years).[231] This results in a $176 million asset remaining on SWEPCO's books at the end of 2046 that is completely unaccounted for in the economic

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[226] Tr. at 459:21-460:2 (Torpey Cross) (Feb. 25, 2020); TIEC Ex. 59.

[227] Tr. at 382:5-19 (Ali Cross) (Feb. 25, 2020). SWEPCO also assumes higher congestion costs prior to 2027.

[228] Tr. at 417:1-4 (Torpey Cross) (Feb. 25, 2020).

[229] TIEC Ex. 59.

[230] Tr. at 23:14-24:17 (Smoak Cross) (Feb. 24, 2020); Tr. at 395:21-24 (Ali Cross) (Feb. 25, 2020).

[231] Tr. at 463:10-12 (Torpey Cross) (Feb. 25, 2020: SWEPCO Ex. 8, Torpey Dir. at Ex. JFT-3 at 10.

analysis.[232] While SWEPCO contends that the gen-tie might still be useful after 2046 because the Wind Facilities could be repowered in place,[233] it offers no evidence to support that claim. SWEPCO's contention that it adequately considered congestion costs in its gen-tie case should be rejected, and the PFD's finding on this point is correct.

3. Capacity Value

Consistent with Commission precedent, the PFD concluded that it is inappropriate to include consideration of a speculative capacity benefit in assessing the economics of the Wind Facilities. In the previous *Wind Catcher* proceeding, SWEPCO made a similar claim that Wind Catcher would provide $269 million NPV of future capacity deferral benefits to customers,[234] and TIEC witness Mr. Pollock similarly noted that these projected benefits were highly speculative.[235] The Commission ultimately deleted the PFD's finding of fact that SWEPCO's capacity benefit estimate was "reasonable and should be used to help determine the expected net benefits of the project."[236] The PFD correctly reached the same result here.

SWEPCO has no capacity need. SWEPCO is currently long on capacity, and will continue to be long on capacity, even without the Wind Facilities, for the foreseeable future if it follows the preferred plan presented in its IRP and Mr. Torpey's testimony.[237] As Mr. Torpey's testimony shows, under the preferred plan, SWEPCO is over 140 MW long until at least 2038,[238] while the capacity attribution associated with the Wind Facilities is only 123 MW.[239] SWEPCO has not demonstrated that ratepayers will realize any capacity benefit associated with the Wind Facilities.

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[232] Tr. at 465:4-7 (Torpey Cross) (Feb. 25, 2020); TIEC Ex. 60. This exhibit shows a $320 million asset in 2051 for both PSO and SWEPCO. SWEPCO's share is 55%, or $176 million.

[233] SWEPCO's Exceptions at 36.

[234] Docket No. 47461, PFD at 119.

[235] *Id.* at 45.

[236] *Compare* Docket No. 47461, PFD at FoF 121 *with id.*, Order at FoF 121.

[237] SWEPCO Ex. 8, Torpey Dir. at 9.

[238] *Id.* at 19.

[239] *Id.* at 9. This chart cuts off after the year 2038.

4. Production Tax Credits

For the same reasons addressed above in Section VI.C.2.c above, the PFD correctly concluded that the value of the PTCs should be evaluated at the P95 level. PTCs are tied to energy production, and SWEPCO only earns PTCs to the extent that kWhs of energy are produced. The energy production assumed for the purposes of the PTCs should be the same as that assumed for the overall net capacity factor. The PFD properly found that SWEPCO's proposed P50 capacity factor overstated the actual median output of the facilities, leaving the P95 projection as the only other calculation SWEPCO put in the record. But, as noted above, the Wind Facilities are woefully uneconomic whether one assumes SWEPCO's overstated P50 level or the P95 level.

VII. PROPOSED CONDITIONS (P.O. ISSUE NOS. 10, 19, 20, 24)

A. SWEPCO's Proposed Conditions

In this case, SWEPCO proposed three guarantees (capital cost, PTC eligibility, and minimum production), similar to ones it proposed in *Wind Catcher*.[240] The Commission found in *Wind Catcher* that those guarantees do not sufficiently protect ratepayers[241] and the PFD makes the same finding in this case. The PFD properly found that SWEPCO's proposed conditions are "inadequate,"[242] "*de minimis*,"[243] and "insufficient to protect consumers from the financial risks of the Project."[244]

SWEPCO's exceptions do little more than reiterate its proposed guarantees, with no explanation of why, contrary to the explanation in the PFD, they would provide meaningful protection to ratepayers. In a nutshell, the guarantees are of little value because: (1) the proposed capital cost cap simply locks in initial capital costs that are excessive and uneconomical, while exempting from the cap any interim capital additions or the cost of a dedicated gen-tie; (2) the PTC guarantee does not apply to the inflated 44.01% capacity factor on which SWEPCO bases its

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[240] *Compare* Docket No. 47461, Proposal for Decision (PFD) at 47-50 (May 18, 2018) *with* Docket No. 49737, PFD at 82-85.

[241] TIEC Ex. 5 at 8.

[242] PFD at 82.

[243] *Id.* at 88.

[244] *Id.* at 120, FoF 112.

economic analysis, but to a 38.1% capacity factor, and even that minimal guarantee provides no ratepayer protection for force majeure and economic curtailments; and (3) the minimum production guarantee is also at the uneconomical 38.1% capacity factor level, offers no protection against force majeure and economic curtailments, lasts only for the first 10 years, and would require ratepayers to wait until years 6 and 11 for any make-whole payment.

The evidence in this case showed that the proposed Wind Facilities would result in much higher rates even if they performed at the level SWEPCO claimed, and that there were any number of reasons to believe that they would not perform at that level. The concerns about the performance of the Wind Facilities are heightened by SWEPCO's refusal to offer performance guarantees at anything approaching SWEPCO's projected output level and its insistence on retaining exceptions—even at the minimal performance levels—for the items that would be most likely to cause even lower performance. The PFD properly found that SWEPCO's proposed conditions offer little or no ratepayer protection.

B. Conditions Contained in Settlements Filed in Other Jurisdictions

SWEPCO declined in its pre-filed testimony and at the hearing to offer any conditions beyond the three discussed above, including the ones it or its sister company had agreed to in other states.[245] SWEPCO CEO Malcolm Smoak specifically stated on the stand at the hearing that SWEPCO did not plan to offer any guarantees in this proceeding other than the three discussed above.[246] And SWEPCO witness Thomas Brice also made clear, that, while SWEPCO would be happy to "entertain" other guarantees should someone else propose them, SWEPCO was not making any proposals beyond the three addressed above.[247] SWEPCO maintained this position throughout its briefs and reply briefs, and the PFD properly found that SWEPCO declined to modify its proposed guarantees.[248]

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[245] *Id.* at 120, FoF 110.

[246] Tr. at 46:5-47:10 (Smoak Cross) (Feb. 24, 2020).

[247] Tr. at 109:20-113:3 (Brice Cross) (Feb. 24, 2020).

[248] PFD at 120, FoF 110.

In its exceptions, SWEPCO for the first time proposes that the Commission adopt five additional guarantees. Had SWEPCO made these proposals at the hearing, the evidence would have shown that these new proposed conditions provide little or no ratepayer protection. At this stage, there is no opportunity to respond to SWEPCO's eleventh-hour proposal, and for that reason alone they should not be considered. If the Commission were to undertake a review of these new proposals, however, it is clear that they do nothing to salvage the economics of the Wind Facilities. In fact, most were considered and found wanting in the *Wind Catcher* proceeding.

First, SWEPCO proposes for the first time in its exceptions to apply the 38.1% minimum capacity factor to each 5-year period over the life of the facilities instead of just the first 10 years. This is similar to the proposal SWEPCO made in *Wind Catcher*, albeit at the much higher 44.7% capacity factor. The proposal does nothing to change the fact that the Wind Facilities are underwater at SWEPCO's erroneously projected 44.01% capacity factor, let alone a 38.1 % capacity factor.

Second, SWEPCO proposes to modify the return it requests to earn on the PTCs that it cannot use, and to limit the inclusion of DTA charges to twenty years. In *Wind Catcher*, SWEPCO proposed to limit DTA charges to only 13 years.[249] As in *Wind Catcher*, the proposal does little or nothing to protect ratepayers from SWEPCO's request for a blank check for whatever PTCs SWEPCO or its parent cannot use when earned.

Third, the new off-system sales proposal is also a proposal SWEPCO made in *Wind Catcher* but chose for some reason not to make in this case, until now. SWEPCO offers no evidence about what the savings might be if the proposal was adopted, but in *Wind Catcher* the Commission found that SWEPCO's proposed guarantees, including this one, were insufficient to protect consumers.[250]

Fourth, the most-favored-nation proposal offers nothing whatsoever beyond the conditions SWEPCO is now proposing to include.

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[249] Docket No. 47461, PFD at 51.

[250] TIEC Ex. 5 at FoF 139A.

Fifth, the "net-benefits-guarantee" is the same proposal that SWEPCO offered in rebuttal testimony in the *Wind Catcher* proceeding, although it was then called the "ten-year lookback."[251] The ALJs in that case recommended that the proposal be denied, noting that it had too many uncertainties and inaccuracies, including SWEPCO's use of its own frozen bid stack to determine avoided costs, rather than actual LMPs.[252] SWEPCO did not even raise this discredited proposal in this case until long after the record closed,[253] and for good reason.

TIEC submits that it is not necessary or appropriate to consider proposals that SWEPCO specifically testified it was not making in this proceeding. In any event, those proposals do nothing to rescue the Wind Facilities from their dismal economics.

XII. CONCLUSION

TIEC requests that SWEPCO's application be denied.

Respectfully submitted,

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[251] Docket No. 47461, PFD at 51-53.

[252] *Id.* at 62.

[253] Docket No. 49737, Letter to ALJs Regarding Louisiana Settlement at 4, 13-15 (Apr. 14, 2020).

CERTIFICATE OF SERVICE

I, Benjamin B. Hallmark, Attorney for TIEC, hereby certify that a copy of the foregoing document was served on all parties of record in this proceeding on this 18th day of June, 2020 by hand-delivery, facsimile, electronic mail and/or First Class, U.S. Mail, Postage Prepaid.

/s/ Benjamin B. Hallmark
Benjamin B. Hallmark